Remarks

In the foregoing amendment, claims 1, 8, 9, 10, 16, 18, 24, 34, 35 and 40 have been amended, and claim 17 canceled. Pending in the application are claims 1-16 and 18-42, of which claims 1, 8, 9, 10, 16, 24, 26, 30, 34 and 35 are independent. The following comments address all stated grounds for rejection, and the Applicant respectfully submits that the presently pending claims, as identified above, are now in a condition for allowance.

Rejection of Claims 1-9, 36-37 and 42 under 35 U.S.C. § 112, Second Paragraph

Claims 1-9, 36-37 and 42 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Office Action states that claims 1, 8 and 9 recite the step of "identifying portions of a model as being either critical to a real-time execution of the model or non-critical to a real-time execution of the model," which is indefinite because the step of generating code is not realized when the portions of the model are identified as being non-critical. Applicant respectfully disagrees. However, to further the prosecution of this application, Applicant has amended claims 1, 8 and 9 to clarify that the method identifies portions of a model as being critical to a real-time execution of the model, and other portions of the model as being non-critical to a real-time execution of the model. In light of the foregoing claim amendments, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claims 1-9, 36-37 and 42 under 35 U.S.C. §112, second paragraph, and pass the claims to allowance.

Rejection of Claims 16-23 under 35 U.S.C. § 112, Second Paragraph

Claims 16-23 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Office Action states that claim 16 recites a single means, which renders the claim indefinite. In the foregoing claim amendments, Applicant has amended claim 16 to incorporate the subject matter recited in claim 17. Claim 17 has been canceled. In light of the foregoing claim amendments, Applicant respectfully requests the Examiner to reconsider and

withdraw the rejection of claims 16-23 under 35 U.S.C. §112, second paragraph, and pass the claims to allowance.

Rejections of Claims 1-42 under 35 U.S.C. § 102

Claims 1-42 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,901,579 ("Suguta"). Applicant respectfully traverses the rejection for the following reasons.

Claims 1-9, 36-38 and 42

Independent claims 1, 8 and 9 identify portions of a model as being *critical to a real-time execution* of the model, and other portions as being *non-critical to a real-time execution* of the model. The claimed invention generates code that is capable of real-time execution based on the critical portions of the model. Claims 2-7, 36-38 and 42 depend on claim 1.

Applicant respectfully submits that Suguta does not disclose the step of identifying portions of a model as being *critical to a real-time execution* of the model, and other portions as being *non-critical to a real-time execution* of the model, and the step of generating code that is capable of real-time execution based on the *critical portions of the model*, as recited in claims 1, 8 and 9. The Office Action states that Suguta discloses these limitations at Column 1, lines 11-17 and Column 2, lines 40-51, respectively. See the Office Action, page 5, lines 11-24. Applicant respectfully disagrees.

Suguta generates an object-oriented language program from a class definition. Suguta discloses generating an object-oriented program by defining new programming definitions, making generation pattern descriptions for generating program patterns, and generating a new object-oriented program from the generation pattern descriptions with the structure information extracted from the class definitions. See Suguta, Column 2, lines 52-61. In Suguta, it can be verified whether or not the generated program includes a definition which conflicts with an existing program immediately after the generation of the program, without waiting for the compiling of the generated program. See Suguta, Abstract.

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In comparison, the claimed invention relates to the code generation of a model-based design, such as a block diagram model. The claimed invention identifies portions of the model as being critical to a real-time execution of the model, and other portions of the model as being non-critical to a real-time execution of the model. The claimed invention generates code for the model based on the critical portions of the model. The non-critical portions are post-processing units, as recited in claim 2. The post-processing units are logical units of the model that have no synchronized data outputs that feed non-post-processing sections of the model, as recited in claim 3.

Suguta does not disclose identifying portions of a model as being critical to a real-time execution of the program. Suguta merely discloses the generation of an object oriented language program using information on the internal structure of an input class definitions. That is, Suguta generates an entirely new program, and the only analysis done to the existing program code relates to extracting its structure from class definitions supplied by a user. See Suguta, Column 2, lines 58-61. Suguta does not teach or suggest analyzing existing model to determine which portions of it are critical to real-time execution. Indeed, there is no mention of the term "real-time" or any other related terminology in Suguta, because Suguta is entirely unconcerned with code execution.

Furthermore, Suguta makes no mention of models or identifying components of a model related to a real-time execution of the model. Consequently, Suguta does not teach or suggest identifying components of a model critical to a real-time execution of the model. Nor does Suguta disclose generating code that is capable of real time execution based on critical portions of the model.

In light of the aforementioned arguments, Applicant respectfully submits that Suguta fails to disclose each and every element of independent claims 1, 8 and 9. Applicant therefore requests the Examiner to reconsider and withdraw the rejection of claims 1-9, 36-38 and 42 under 35 U.S.C. §102(e), and pass the claims to allowance.

Claims 10-15, 26-29 and 39

Independent claims 10 and 26 specify a model that includes a first subset of sections designated *post processing unit sections*, and a second subset of sections designated as *core processing unit sections*. The claimed invention generates code for the model using the second subset of sections. Claims 11-15 and 39 depend on claim 10, and claims 27-29 depend on claim 26.

Applicant respectfully submits that Suguta does not disclose the step of specifying a model that includes a first subset of sections designated *post processing unit sections*, and a second subset of sections designated as *core processing unit sections*, and the step of generating code for the model using the second subset of sections, as recited in claims 10 and 26.

The claimed invention specifies a model, such as a block diagram, and generates code for the model. In the claimed invention, the model includes a first subset of sections designated post processing unit sections, and a second subset of sections designated as core processing unit sections. The post processing unit sections are logical units of the model that have no data outputs that feed core processing unit sections, as recited in claim 11. The claimed invention generates code for the model using the second subset of sections designated as core processing unit sections.

As described above, Suguta discloses the generation of an object oriented language program using information on the internal structure of an input class definition. Suguta, however, does not disclose specifying a class definition that includes a first subset of sections designated post processing unit sections, and a second subset of sections designated as core processing unit sections. Furthermore, Suguta does not generate code for a model using the core processing unit sections of the model.

Additionally, Applicant submits that Suguta does not disclose the step of linking the code to the first subset of sections through *an inter-process communication link*, as recited in dependent claim 13. The Office Action states that Suguta discloses this limitation in Fig. 3 and Column 6, lines 30-38. See the Office Action, page 6, line 7-10. Applicant respectfully

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disagrees. Suguta discloses in Fig. 3 an apparatus for the automatic generation of an object-oriented program. The apparatus, however, does not include an inter-process communication link. In Fig. 4, Suguta discloses an input/output unit (9) connected to a computer system (8). See Suguta, Column 6, lines 30-38. This connection is not an inter-process communication link. Since the system (8) disclosed in Suguta is not a multi-process system, Suguta does not need to discuss an inter-process communication link. Therefore, Suguta does not disclose an inter-process communication link that links the code to the first subset of sections, as recited in the claimed invention.

In light of the aforementioned arguments, Applicant respectfully submits that Suguta fails to disclose each and every element of independent claims 10 and 26. Applicant therefore requests the Examiner to reconsider and withdraw the rejections of claims 10-15, 26-29 and 39 under 35 U.S.C. §102(e), and pass the claims to allowance.

<u>Claims 16-23 and 40-41</u>

Independent claim 16 recites a system including a graphical user interface (GUI). The GUI is adapted to receive user inputs to specify components of a model in one of a first subset of sections designated as post-processing elements of a model and a second subset of sections designated as core elements of the model. The system also includes an automatic code generator to generate code capable of real-time execution based on the second subset of sections. Claim 17 has been canceled. Claims 18-23 and 40-41 depend on claim 16.

Applicant respectfully submits that Suguta does not disclose an automatic code generator generating code capable of real-time execution based on the second subset of sections, as recited in claim 16.

Suguta discloses generating an object oriented language program using information on the internal structure of an input class definitions. Suguta, however, does not disclose the generation of a program that is capable of real-time execution. Although Suguta discloses the generation of a program, Suguta does not disclose that the generated code is capable of "real-time" execution. Suguta does not discuss the execution of the program.

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In light of the aforementioned arguments, Applicant respectfully submits that Suguta fails to disclose each and every element of independent claim 16. Applicant therefore requests the Examiner to reconsider and withdraw the rejections of claims 16-23 and 40-41 under 35 U.S.C. §102(e), and pass the claims to allowance.

<u>Claims 24-29, 34, 35</u>

Independent claims 24, 34 and 35 recite that a user input is received through a graphical user interface (GUI) specifying *a block diagram model*, the block diagram model including sections, a first subset of sections designated post-processing unit sections and a second subset of the sections designated as core processing unit sections. The claimed invention generates software source code for *the block diagram model* with a code generator using the second subset. The software source code is connected to the first subset via *an inter-process communication link*, and compiled into executable code. Claims 25-29 depend on claim 24.

Applicant respectfully submits that Suguta does not disclose the step of receiving user input through a graphical user interface (GUI) specifying *a block diagram model*, and the step of generating software source code for *the block diagram model* with a code generator using the second subset, as recited in claims 24, 34 and 35.

Suguta discloses the generation of an object oriented program from a class definition. Suguta, however, does not specify a block diagram model, and generate software source code for the block diagram model. Suguta does not disclose anything about a block diagram model.

Additionally, Applicant respectfully submits that Suguta does not disclose the step of connecting the software source code to the first subset via *an inter-process communication link*, as recited in claims 24, 34 and 35. Suguta does not disclose an inter-process communication link that connects the software code, which is generated using a second subset of sections designated as core processing unit sections, to the first subset of sections designated post-processing unit sections.

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In light of the aforementioned arguments, Applicant respectfully submits that Suguta fails to disclose each and every element of independent claims 24, 34, and 35. Applicant therefore requests the Examiner to reconsider and withdraw the rejections of claims 24-29, 34 and 35 under 35 U.S.C. §102(e), and pass the claims to allowance.

Claims 30-33

Independent claim 30 specifies *a block diagram model*, the block diagram model including data having internal pre-defined data storage classes and external custom data storage classes. Software source code is generated for *the block diagram model* with a code generator using the internal predefined data storage classes and the external custom data storage classes.

Applicant respectfully submits that Suguta does not disclose the steps of specifying *a block diagram model*, and generating software source code for *the block diagram model*, as recited in claim 30. Suguta discloses the generation of an object oriented program from a class definition. Suguta, however, does not disclose specifying a block diagram model, and generating software source code for the block diagram model. Suguta does not disclose anything about a block diagram model.

In light of the aforementioned arguments, Applicant respectfully submits that Suguta fails to disclose each and every element of independent claim 30. Applicant therefore requests the Examiner to reconsider and withdraw the rejections of claims 30-33 under 35 U.S.C. §102(e), and pass the claims to allowance.

Claim Rejections - 35 U.S.C. §103

Claim 16 is rejected under 35 U.S.C. §103(a) as being unpatentable over Suguta. Applicant respectfully traverses the rejection for the following reasons.

Claims 16 recites a system including a graphical user interface (GUI). The GUI is adapted to receive user inputs to specify components of a model in one of a first subset of sections designated as post-processing elements of a model and a second subset of sections

designated as core elements of the model. The system also includes an automatic code generator to generate code capable of real-time execution based on the second subset of sections.

Applicant respectfully submits that Suguta does not teach or suggest an automatic code generator generating code capable of real-time execution based on the second subset of sections, as recited in claim 16.

Suguta teaches the generation of an object oriented language program using information on the internal structure of an input class definitions. Suguta, however, does not teach or suggest the generation of code capable of real-time execution. Although Suguta teaches the generation of a program, Suguta does not teach or suggest that the program is capable of "real-time" execution. Suguta does not teach or suggest anything about the execution of the program.
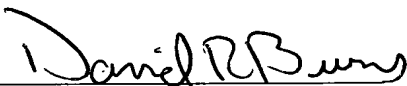
In light of the aforementioned arguments, Applicant respectfully submits that Suguta fails to teach all of the limitations of claim 16. Applicant therefore requests the Examiner withdraw the rejections of claim 16 under 35 U.S.C. §103(a), and pass the claims to allowance.

Conclusion

In view of the above, each of the presently pending claims in this application is believed to be in condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. If, however, the Examiner considers that further obstacles to allowance of these claims persist, we invite a telephone call to Applicant's representative.

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